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ABSTRACT

This study was concerned with student perceptions of teacher warmth through verbal, nonverbal, and combined channels of communication, and with the identification of nonverbal cues that contributed to students' perceptions of teacher warmth. The study is based on the assumption that teaching is a communicative process that is facilitated by the participants' ability to perceive empathy. Seventy-five high school subjects reacted to a videotape using a teacher warmth rating scale. Random subjects were interviewed, and their protocols were kept. Three conditions were used with groups of twenty-five subjects each. Post-hoc analysis indicated that: (1) warmth is perceived primarily through nonverbal channels; (2) students can identify specific teacher behaviors; (3) certain behaviors contribute to students' perceptions of warmth; and (4) students are aware of affective states conveyed by teachers. (Author/MJB)

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NONVERBAL CUES OF TEACHER WARMTH AS PERCEIVED BY STUDENTS

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This study investigated teacher nonverbal behaviors which were conceptually related to "warmth" in students' perceptions. The study is based on the assumption that teaching is a communicative process which is facilitated by the participants' ability to perceive empathy.

Background

In the past thirty-five years many terms have been used to describe a teacher's efforts to influence classroom events. Most of these terms describe behaviors which occur along some hypothetical dimension of teaching, and include such terms as "dominative-integrative" (Anderson, 1939), "teacher-centered-learner-centered" (Withall, 1949), and "direct-indirect teacher influence" (Flanders, 1970). These terms pertain directly to the notion of classroom climate, described by Withall as a representation of "the emotional tone which is a concomitant of interpersonal interaction" (1967, p. 49).

Dunkin and Biddle (1974) modified earlier researchers' dimensions of teaching into concepts of teacher behavior. One of these concepts is teacher "warmth." The study reported here used the concept of warmth as its base, and to a certain degree contributed to knowledge of teacher behaviors that may compose "warmth."

The Concept of Warmth

Researchers define the term in varied ways. Reed (1961, p. 333) defines warmth as "behaviors that relax interpersonal tension." Gazda (1973) defines it as "the physical expression of empathy (understanding) and respect (caring)." Dunkin and Biddle (1974, p. 94) define it as "a person's affective response to others." There are other definitions that are worded differently, but all refer to the same qualities. For this study, the following definition was used:

Warmth refers to teacher behavior that is perceived by students as

empathetic, caring, and contributing to a relaxed, mutually respectful atmosphere.

A positive relationship between teacher warmth and student achievement has yet to be established, though research is pointing toward such a relationship (Rosenshine, 1970; Rosenshine and Furst, 1971). Neither have all components of warmth been clearly delineated. A problem still exists in satisfactorily defining components of teacher warmth, many of which are communicated nonverbally.

Purpose of the Study

This study was conducted in an attempt to answer two research questions:

1. Are student perceptions of teacher warmth based more heavily on nonverbal teacher cues (cues that are seen but not heard), verbal teacher cues (cues that are heard but not seen), or audiovisual teacher cues (cues that are both seen and heard)?

2. What specific nonverbal teacher behaviors contribute to students' perceptions of teacher warmth?

Procedures

The procedures used in the study may be divided into three steps. The first step, instrumentation, consisted of the development and pilot testing of a rating scale designed to be used by students in assessing their perceptions of teacher warmth. The second step was the selection of a sample of teacher behavior to be shown to students. The third step was using the scale to obtain student perceptions of teacher behavior. Finally, students were interviewed so that specific behaviors of teacher warmth might be identified.

The rating scale consisted of nineteen bipolar adjectives pertaining to warmth (e.g., "friendly - unfriendly"). A pilot test showed that the scale was reliable (r_{tt}=.78) and that students had no difficulty with the vocabulary.

The videotape chosen was one of a student intern in a microteaching situation. The tape was screened to assure the presence of behaviors that might be considered warm, and to assure that it was short enough (ten minutes) to hold students' attention.

Sample. Seventy-five students from two high schools near Houston participated in the study. The subjects were chosen on the basis of their teachers' willingness to donate class time to the study. The subjects were divided randomly into three treatment groups of twenty-five each. One group saw, but did not hear, the teacher (the volume on the video monitor was turned down); the second group heard, but did not see, the teacher (the monitor screen was darkened); and the final group both saw and heard the teacher.

Data collection. The three treatment groups described were subdivided into five groups of five subjects each. The researcher explained that the subjects were going to see, hear, or see and hear, a teacher; and explained the use of the rating scale. The students were exposed to the tape. After subjects had filled out the rating scale, one subject was randomly chosen to remain with the researcher while the others returned to class. This subject was interviewed in order to obtain his perceptions of specific behaviors that contributed to his overall rating of the teacher. The interviews were audiotaped and later transcribed. In this manner both overall perceptions of warmth and specific behaviors associated with warmth were elicited from the subject.

Data Analysis

The first research question was answered through a one-way, fixed-effects analysis of variance. Any obtained F-ratio significant at the $P \leq .05$ level or better was noted, and subjected to post-hoc analysis through the Tukey procedure in order to determine the treatment group responsible for the difference.

The second research question was answered through a chi-square procedure. Significant chi-square values were further analyzed to determine which specific behaviors differed from others.

Results

As shown in Table I, the ANOVA performed on the rating scale as a whole yielded an F-ratio significant at the .05 level. Post-hoc analysis showed that the group responsible for the difference was Group II, which differed from Group I. Specific item analyses of variance (Table II) yielded nine significant F-ratios, which were also analyzed through the Tukey procedure. The significant items were considered in light of the specific behaviors mentioned for each, since these behaviors contributed to the differences.

TABLE I

MEANS TABLE AND
ANALYSIS OF VARIANCE
ON THE OVERALL RATING SCALE

Source	Mean	S.D.	df	M.S.	F
Visual only	72.400	18.779			
Audio only	84.400	7.703			
Audiovisual	74.680	17.041			
Between Groups			2	1015.3184	4.3365* **
Within Groups			72	234.1312	
Total			74	1249.4496	

*$p \leq .05$

** $.95q_{3,72} = 3.38$

TABLE II

ANALYSIS OF VARIANCE RESULTS
FOR EACH ITEM IN THE RATING SCALE

Item	Source	df	M.S.	F	*p
1	Btwn. Grps.	2	2.4400	3.2776*	.05
	Wthn. Grps.	72	.7444		
2	Btwn. Grps.	2	2.2533	2.7895	
	Wthn. Grps.	72	.8078		
3	Btwn. Grps.	2	1.7200	1.3368	
	Wthn. Grps.	72	1.2867		
4	Btwn. Grps.	2	1.6933	3.0723	
	Wthn. Grps.	72	.7833		
5	Btwn. Grps.	2	3.0400	1.8895	
	Wthn. Grps.	72	1.6089		
6	Btwn. Grps.	2	4.0133	2.8712	
	Wthn. Grps.	72	1.3078		
7	Btwn. Grps.	2	6.0400	6.2268*	.005
	Wthn. Grps.	72	.9700		
8	Btwn. Grps.	2	2.5600		
	Wthn. Grps.	72	1.4222		
9	Btwn. Grps.	2	7.0933	4.9681*	.05
	Wthn. Grps.	72	1.4278		
10	Btwn. Grps.	2	1.6533	1.3676	
	Wthn. Grps.	72	1.2089		
11	Btwn. Grps.	2	1.7733	1.5450	
	Wthn. Grps.	72	1.1478		
12	Btwn. Grps.	2	5.7600	5.0973*	.01
	Wthn. Grps.	72	1.1300		
13	Btwn. Grps.	2	3.8800	3.1659*	.05
	Wthn. Grps.	72	1.2256		
14	Btwn. Grps.	2	4.8933	3.9321*	.05
	Wthn. Grps.	72	1.2444		
15	Btwn. Grps.	2	3.4533	1.8802	
	Wthn. Grps.	72	1.8367		
16	Btwn. Grps.	2	5.6133	4.5188*	.05
	Wthn. Grps.	72	1.2422		
17	Btwn. Grps.	2	1.0000	.7177	
	Wthn. Grps.	72	1.3933		
18	Btwn. Grps.	2	5.8800	4.4211*	.05
	Wthn. Grps.	72	1.3300		
19	Btwn. Grps.	2	6.4933	3.3529*	.05
	Wthn. Grps.	72	1.9956		

In the interviews it became apparent that students perceive teacher warmth through a variety of behaviors. The behaviors mentioned were "smiles," "nods," "teacher's use of the eyes," "gestures," "movement," "use of time," "intonation," and "laughs." Table III is a summary of the behaviors mentioned by students in conjunction with each item, while Table IV indicates the chi-square values for the behaviors.

Discussion of Results

The results documented in Tables I - IV indicate that students generally agree in their perceptions of teacher warmth. Because the rating scale was composed of bipolar adjectives on a scale from one to five, a score of three may be considered neutral, and a score above three may be considered to indicate "warmth." Using these criteria for warmth, only Group I in Item 19 rated the teacher below the minimum score for warmth, at a mean of 2.88, indicating that the group as a whole rated the teacher more dictatorial than democratic. Examination of the interview data in Table IV indicates that students in Group I were hard pressed to identify behaviors contributing to their perceptions, mentioning only "teacher's use of the eyes." According to Exline (1974), eye contact is a powerful factor in nonverbal communication, and when eye contact is used in situations where negative feelings are communicated, use of the eyes reinforces the negative overtones. The students in Group I may have rated the teacher lower on Item 19 because of the way she used her eyes, which they may have perceived as negative or threatening.

The results also indicate that students in the verbal group consistently rated the teacher higher than did the students in the nonverbal and audio-

TABLE III

BEHAVIORS MENTIONED BY STUDENTS BY GROUP AND ITEM

Item #	Smiles		Nods		Eyes		Gestures		Mvmt.		Time		Int.		Laughs	
Grp.#	1	3	1	3	1	3	1	3	1	3	2	3	2	3	2	3
1	4	4	1	1							2		2	1		1
2	1				2	2					1	1				
3		1	2	1	2	2					3					
4	3	4	1					1					1			
5					1		2		1		3	5				
6		1	1		1											
7	1	2	4								1					
8	1		3		1											1
9	3	3		1							1		4	1		1
10	2	2	3	3												
11					3	1					2	4				
12		1	1		3	4					2					
13	2	2	3	3									1			
14	2	2		1					1				1	2		
15			2	1	1						1					
16							3	3								
17	2		3		1								1	1		
18	2												2	2		
19					1						2	3				

TABLE IV

χ^2 VALUES FOR BEHAVIORS BY TREATMENT GROUP

Treatment Group	Behaviors								Group χ^2
	Smiles	Nods	Eyes	Gestures	Mvmt.	Time	Int.	Laughs	
Nonverbal Cue only	5.97*	7.14**	.29	5.79*	10.29**				29.3****
Verbal Cue only						4.9*	.4	8.1**	13.4***
Audio-visual	20.06**	.58	.01	2.58	8.75*	2.06	.04	2.58	36.66*****

*p < .05; χ_1^2 = 3.841 @ .05

**p < .01; χ_1^2 = 6.635 @ .01

***p < .01; χ_2^2 = 9.210 @ .01

****p < .001; χ_4^2 =18.465 @ .001

*****p < .001; χ_7^2 =24.332 @ .001

visual groups. This may be due to the limited information provided the students in the verbal group, who could only hear the teacher. The students in the audiovisual group had more information on which to base their perceptions, since they could both see and hear the teacher, while the students in the nonverbal group were presented with even less information than the verbal group, and had to look much deeper for behaviors enabling them to respond to the rating scale. The students in the verbal group may have been responding to the teacher's words and inflection only, having no other cues to mediate their responses, and thus rated the teacher higher than did the other two groups.

Perhaps a more plausible explanation for the higher ratings given the teacher by the verbal group is that the students who were exposed to nonverbal cues saw something in the teacher's behavior that brought down their overall perceptions of teacher warmth. If this is the case, then students in the nonverbal group should have rated the teacher consistently lower than did the students in the verbal group, who had no visual cues, and lower than the students in the audiovisual group as well. This, in fact, is the case. In the thirteen of the nineteen cases, or slightly over 68% of the time, students in the nonverbal group rated the teacher lower than students in either Groups II or III. It may be that the teacher's nonverbal behavior and the additional information it provided for Group III served as a check on the verbal behavior.

Because students in the verbal group consistently rated the teacher higher than did students in the other groups, it may appear that they were responding to the teacher's words, or semantic meaning. Examination of the interview data indicates that this is not the case. The only behaviors mentioned by the verbal group were intonational or temporal. Even when semantic factors were mentioned in conjunction with nonverbal or intonational factors. For example,

if a student mentioned that the teacher said "Good!" to a student, it was mentioned how the word was said: "Good!" as opposed to "Good." The fact that the behaviors mentioned by students in the verbal group were nonverbal or intonational indicates that the high ratings from the verbal group were due to nonverbal, rather than semantic, factors.

Examination of Table IV also indicates that certain behaviors were mentioned more often than others as possible indicators of warmth. The chi-square results show the behaviors that were mentioned frequently enough to be statistically significant. Of the eight behaviors mentioned by all the groups totalled, only two were not found significant by any group: use of the eyes and intonation. These behaviors were not mentioned frequently enough to yield statistically significant results, though the mere fact that they were mentioned at all signifies that they were factors in some students' perceptions. Thus they cannot be ignored as possible indicators of warmth, even though they were not statistically significant. Thus smiles, nod, gestures, body movement, use of time, and laughter may be said to be statistically significant elements contributing to students' perceptions of teacher warmth, while eye contact and intonation are less significant, though real, elements of the teacher's warmth.

Conclusions

The first major conclusion drawn from this study is that students perceive warmth primarily through nonverbal channels of communication. This conclusion is supported by the analysis of variance, which showed that all students in all groups scored the teacher's actions as more warm than cold. Additional support is gained from the evidence in the interviews, where students mentioned nonverbal and vocal factors as contributors to their overall perceptions.

A second conclusion is that students are able to identify and name certain behaviors that contribute to their overall perceptions of a teacher, in this case behaviors pertaining to teacher warmth. When asked to tell why they responded as they did to the rating scale the students, with no prompting, named specific behaviors that contributed to their overall perceptions. The students in this study are therefore said to be acutely aware of teacher behavior, aware to the extent that they can cite examples of behavior that affect their perceptions.

The third major conclusion is that students perceive certain types of behaviors as contributing to their overall perceptions of teacher warmth. A total of eight behaviors were mentioned by all groups, indicating that all mentioned behaviors were important for some students. Statistical significance can be assigned to six behaviors: "smiles," "nods," "gestures," "body movements," "use of time," and "laughs." The fact that two behaviors ("use of the eyes" and "intonation") were not statistically significant does not mean that they can be ignored as elements of teacher warmth; it merely means that they were not named as frequently as the statistically significant behaviors.

The final conclusion of the study is that students are able to rate the teacher on certain traits or characteristics, as described by the adjectives in the rating scale. Students in the study may therefore be said to be aware of affective states conveyed by teachers. The students in this study were adept at going beyond the content of the lesson to the affective state of the teacher, thereby indicating that they were aware of more than just content. They were aware of emotional overtones as well.

Summary

Using the concept of teacher warmth as its base, this study attempted to identify two aspects of teacher-student communication: the channel(s) by which

warmth is communicated, and the specific behaviors that may compose the concept of teacher warmth. Seventy-five high school students were divided into three treatment groups, and the groups were shown a videotape of a teacher (adjusted to reflect nonverbal, verbal, and combined channels of communication). Specific behaviors were elicited from some students, and all students rated the teacher on a scale designed to assess their perceptions of teacher warmth. Results show that students perceive teacher warmth primarily through nonverbal channels of communication, and that certain behaviors, with a high degree of statistical confidence, can be said to contribute to their perceptions of teacher warmth.

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